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M.A.C.E. JOURNAL

"People For Computers"

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- * Atari Bulletin Board Directory



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LIGHT PEN PRIMER

By Marshall S. Dubin

A light pen is a device which can "read" the location of the electron beam on your television screen. This information is interpreted by your computer as an X,Y location, and as a result, the computer is capable of knowing exactly where the pen is pointed on your TV screen at any given moment. Knowing this, your software can react to the position of the light pen, and perform accordingly.

Light pens are useful in many different applications. For example, in programs featuring menu options, the user has only to point the pen at the selected option. The computer, by reading the X,Y coordinates of the pen can branch to the option selected. A typical program might be structured like this:

...POSITION and PRINT to the screen:

```
-----  
      O Selection A  
      O Selection B  
      O Selection C  
      .  
      Touch pen to your selection  
-----
```

Your program then interprets the light pen coordinates as follows:

```
...IF PENy=20 THEN BRANCH SELECTION A  
...IF PENy=40 THEN BRANCH SELECTION B  
...IF PENy=60 THEN BRANCH SELECTION C
```

The X coordinates are ignored for this example (X refers to the horizontal axis).

There are also numerous educational

applications. For example, a pre-schooler might use the pen to select between different letters, numbers, words, and shapes. The light pen has also found extensive use in the areas of industrial training, graphics design, medical applications, design applications, and much more. They are especially suited for applications with the handicapped, since they are easier to manipulate than a keyboard or joystick. For example, you could display the letters A-Z, and the user could point the pen at them one at a time. The computer would accept them, possibly put them into a command string, and thus one could interact with the computer without ever needing to use keys. To someone with limited physical ability, this would be useful.

BASIC THEORY OF OPERATION

The light pen works by reading the TV screen. A television picture is put on the screen by a "beam" of electrons. This beam starts in the upper left hand corner of the screen and scans across each row horizontally. When it finishes a row, the beam jumps all the way to the left and down to the next row. It then scans across that row. When all rows have been scanned, the beam jumps back up to the upper left corner to begin again. The process happens 60 times a second, so to your eyes it looks as if there is continuous picture. Actually, as the beam scans, it lights up one small spot on the screen at a time. This is turned off when the beam leaves it to scan the next spot, etc. So for any given moment, only one tiny part of the screen is actually lit. This is an ON/OFF situation, especially suited for use with a computer.

When the beam lights up part of the screen, a light sensing device in the pen sends a pulse to the STRIG pin of the Atari. This is pin 6 of the front port jacks. The pulse pulls this pin low, which causes the light pen registers located at 564 and 565 (decimal) to be updated with current information about the TV screen's current scan position. This information is geared to the time synchronization of your TV signal.

Returned in the light pen registers will be the approximate values 71-227 horizontal (564), and 19-111 vertical (565). Actually the horizontal values will begin at the far left with the value of 71, and at the far right of the screen, will pass 227 and begin with 1. This is a form of scrolling which results from the delay incurred from the time the TV signal is detected to the time your computer records the value in the light pen register.

So, the light pen detects the TV beam, and this tells the computer exactly where your pen is pointing. Thus the exact position of the TV beam is known. So now what? Here's what a typical skeleton program would look like:

```
100 REM READ PEN REGISTERS
110 X=PEEK 564:Y=PEEK(565)
115 REM...USE THE DATA AS YOU SEE FIT
120 IF X=200 AND Y=90 THEN ...
130 IF X=80 THEN ...
```

The IF/THEN statements can be used to branch to a routine, plot or draw a graphics screen, turn on a relay, or you name it.

When calibrating your pen to the screen, use the statement:

```
10 PRINT PEEK(564),PEEK(565):GOTO 10
```

This will tell you the pen's location. Knowing where you will want the user to point the pen, just note the values from 564 and 565 in your IF/THEN statements. Then if the values returned by the user while pointing the pen match the values you have pre-recorded and entered in your IF/THEN statements, the computer will branch accordingly.

A PRACTICAL EXAMPLE

The program listing contains an example light pen drawing routine for graphics mode 7. It reads the values of the light pen

registers several times and determines an average value. This value is then used to PLOT a line on the screen.

To clear the screen, just move the pen into the text window and press the trigger (assuming you have one). Speaking of triggers, different light pens use different triggering points. For example the SYMTEC light pen uses the joystick trigger STRIG(0). A 15 in this location indicates the trigger is pressed. You must first determine which location your light pen uses for a trigger. Next you need to know the value of that location when the trigger has been pressed. This gets entered on line 160 of the program listing.

By the way, you really don't need a trigger at all. Alternatively you could just read the keyboard instead of the trigger with the commands:

```
160 POKE 764,255
165 IF PEEK(764) > 255 THEN 160
```

You can change the program to work in GRAPHICS 8 by substituting these lines for lines 280,285 and 290 in the listing:

```
280 H=INT(((H1*2)+H2)/3)
285 V=INT(((V1*2)+V2)/3)
290 H=(H-71)*2:V=(V-17)*2
```

LIGHT PEN DEMO PROGRAM

```
10 REM
20 REM Basic Light Pen Demo Routine
30 REM For Graphics 7 Drawing
40 REM -----
50 POKE 82,0:GRAPHICS 7:POKE 752,1
55 SETCOLOR 4,3,6:SETCOLOR 3,2,0:COLOR 2
60 PRINT "DRAW: Position pen and press trigger"
70 PRINT "CLEAR: Position at text, press trigger."
80 PRINT "EXIT: Press ESCAPE key."
90 REM
100 REM -----
110 REM Line 160 idles program until
120 REM the pen trigger is pressed.
130 REM -----
160 IF STICK(0)=15 THEN 160
```

```

170 REM
180 REM -----
190 REM Lines 260 to 310 read the
200 REM pen registers, average the
210 REM values of two readings for
220 REM stability, then plots the
230 REM location on the screen.
240 REM -----
250 REM
260 TRAP 40000:GOSUB 390:H1=H:V1=V
270 GOSUB 390:H2=H:V2=V
280 H=INT((H1*7)+H2)/8
285 V=INT((V1*7)+V2)/8
290 H=(H-71):V=(V-17)
300 TRAP 260:PLOT H,V
310 GOTO 160
320 REM
330 REM -----
340 REM Routine gets pen coordinates
350 REM and compensates for hardware
360 REM scrolling on the Hor. value.
370 REM -----
380 REM
390 H=PEEK(564):IF H<4 THEN H=H+227
400 IF H<73 THEN 330
410 V=PEEK(565):IF V<17 OR V>112 THEN 410
420 IF V>95 AND STICK(0)<>15 THEN 50:REM Clear
screen
430 RETURN

```

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M.A.C.E. SUGGESTION BOX

Do you sometimes find that you have Atari related questions but aren't sure who can provide the answers?

Do you have a suggestion concerning something that could be presented at the monthly meeting? (Software, hardware, programming techniques, etc.)

Have you written a program or demo that you would be willing to share with fellow M.A.C.E. members?

Do you have a favorite game that you'd like to demonstrate?

If you answered "yes" to any or all of the above questions, then the M.A.C.E. Suggestion box is just what you've been looking for.

The M.A.C.E. Suggestion Box is an attempt to provide members the opportunity to participate in the planning and presentation of the general membership meetings.

We will try to use submitted programs, demos, and/or game demonstrations that we feel are appropriate for general membership viewing. However, all such items will be reviewed by M.A.C.E. officers before any decision is made.

When possible, we will answer your questions within a meeting or two of their submission. Some of these questions and answers may also appear in the M.A.C.E. Journal.

Each month the M.A.C.E. Suggestion Box will be located near the M.A.C.E. Journal table. Just fill out one of the forms that you'll find there and deposit it in the box. Please provide your name and telephone number in case we need any additional information. If you can't submit your question or suggestion at a meeting, then you can mail it to Tom Sturza, 18684 Purlingbrook, Livonia, MI 48152.

ASSEMBLER SIG By Todd Meitzner, Secretary, SIGASM

September Meeting

This time we have obtained a meeting place for the September 1st meeting before the MACE meeting. This meeting will take place in Panko Musyk's house in Detroit. The directions to this house were given in the August meeting or are available from one of the officers of the SIG-ASM group. They are Al Melocke, 775-6895, and Todd Meitzner, 542-1752. Hope to see you there.

MACE UNCLASSIFIEDS

SOFTWARE AUCTION: To benefit CHAOS (Capitol Hill Atari Owners Society), September 10, 9:00 AM. Foster Community Center, Lansing, MI. Call 1-517-351-3092 for more information.

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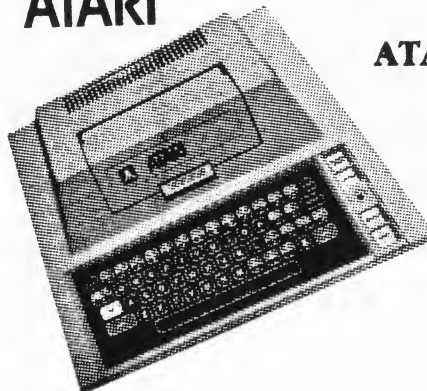
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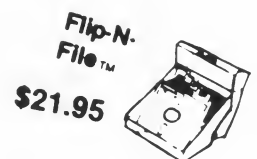
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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
EA	ATARI .BAS	INSIDE ATARI BASIC	PRG AID	10	BASIC	032
EA	IAB102	PAGE 102	PRG AID	10	BASIC	006
EA	IAB103	PAGE 103	PRG AID	10	BASIC	006
EA	IAB115	PAGE 115	PRG AID	10	BASIC	004
EA	IAB117	PAGE 117	PRG AID	10	BASIC	003
EA	IAB118	PAGE 118	PRG AID	10	BASIC	004
EA	IAB128	PAGE 128	PRG AID	10	BASIC	003
EA	IAB131	PAGE 131	PRG AID	10	BASIC	005
EA	IAB131B	PAGE 131	PRG AID	10	BASIC	005
EA	IAB132	PAGE 132	PRG AID	10	BASIC	002
EA	IAB133	PAGE 133	PRG AID	10	BASIC	003
EA	IAB134	PAGE 134	PRG AID	10	BASIC	002
EA	IAB135	PAGE 135	PRG AID	10	BASIC	008
EA	IAB136	PAGE 136	PRG AID	10	BASIC	003
EA	IAB137	PAGE 137	PRG AID	10	BASIC	004
EA	IAB138	PAGE 138	PRG AID	10	BASIC	006
EA	IAB140	PAGE 140	PRG AID	10	BASIC	003
EA	IAB145	PAGE 145	PRG AID	10	BASIC	004
EA	IAB150	PAGE 150	PRG AID	10	BASIC	003
EA	IAB153	PAGE 153	PRG AID	10	BASIC	002
EA	IAB157	PAGE 157	PRG AID	10	BASIC	007
EA	IAB158	PAGE 158	PRG AID	10	BASIC	004
EA	IAB159	PAGE 159	PRG AID	10	BASIC	005
EA	IAB160	PAGE 160	PRG AID	10	BASIC	008
EA	IAB161	PAGE 161	PRG AID	10	BASIC	002
EA	IAB162	PAGE 162	PRG AID	10	BASIC	002
EA	IAB163	PAGE 163	PRG AID	10	BASIC	006
EA	IAB164	PAGE 164	PRG AID	10	BASIC	004
EA	IAB165	PAGE 165	PRG AID	10	BASIC	006
EA	IAB166	PAGE 166	PRG AID	10	BASIC	002
EA	IAB167	PAGE 167	PRG AID	10	BASIC	003
EA	IAB169	PAGE 169	PRG AID	10	BASIC	003
EA	IAB170	PAGE 170	PRG AID	10	BASIC	002
EA	IAB171	PAGE 171	PRG AID	10	BASIC	006
EA	IAB172	PAGE 172	PRG AID	10	BASIC	003
EA	IAB173	PAGE 173	PRG AID	10	BASIC	002
EA	IAB174	PAGE 174	PRG AID	10	BASIC	005
EA	IAB174B	PAGE 174	PRG AID	10	BASIC	004
EA	IAB174C	PAGE 174	PRG AID	10	BASIC	003
EA	IAB48	PAGE 48	PRG AID	10	BASIC	003
EA	IAB51	PAGE 51	PRG AID	10	BASIC	003
EA	IAB53	PAGE 53	PRG AID	10	BASIC	003
EA	IAB54	PAGE 54	PRG AID	10	BASIC	004
EA	IAB55	PAGE 55	PRG AID	10	BASIC	004
EA	IAB56	PAGE 56	PRG AID	10	BASIC	005
EA	IAB57	PAGE 57	PRG AID	10	BASIC	002
EA	IAB58	PAGE 58	PRG AID	10	BASIC	003
EA	IAB59	PAGE 59	PRG AID	10	BASIC	006
EA	IAB61	PAGE 61	PRG AID	10	BASIC	003
EA	IAB62	PAGE 62	PRG AID	10	BASIC	003
EA	IAB63	PAGE 63	PRG AID	10	BASIC	004
EA	IAB68	PAGE 68	PRG AID	10	BASIC	002
EA	IAB69	PAGE 69	PRG AID	10	BASIC	007
EA	IAB72	PAGE 72	PRG AID	10	BASIC	005
EA	IAB73	PAGE 73	PRG AID	10	BASIC	011
EA	IAB78	PAGE 78	PRG AID	10	BASIC	004
EA	IAB79	PAGE 79	PRG AID	10	BASIC	002
EA	IAB80	PAGE 80	PRG AID	10	BASIC	003
EA	IAB82	PAGE 82	PRG AID	10	BASIC	003
EA	IAB89	PAGE 89	PRG AID	10	BASIC	004
EA	IAB90	PAGE 90	PRG AID	10	BASIC	006

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DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
AA	AMODEM42	YOU NEED A MODEM	UTIL	10	BASIC	065
AA	BIGFAST	LARGE LETTER ON SCREEN	DEMO	8	BASIC	007
AA	FIRSTAID	DOCTORS ADVICE	EDUC	9	BASIC	087
AA	FROGGIE.OBJ	UNBELIEVABLE ! ! !	GAME	10+	OBJ	040
AA	FROGGMOD	DATA FILE FOR FROGGIE	GAME	NA	OBJ	002
AA	MANIAC.OBJ	SHOOT YOUR WAY OUT	GAME	10	OBJ	032
AA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	009
AA	OILGAME	DRILL FOR OIL	GAME	9	BASIC	100
AA	POWER	YOU ARE THE GENERAL	STRAT	7	BASIC	062
AA	SOUNDEMO	USE YOUR PADDLES	DEMO	8	BASIC	012
AA	SPEDEMON	DRIVE CAR THRU COURSE	GAME	8	BASIC	051
AA	SPLINE	DRAW CURVED LINES	DEMO	7	BASIC	020
AA	SUNRISE	REVISED SUNSET	DEMO	9	BASIC	022

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BA	BALLOONS	SHOOT FLYING OBJECTS	GAME	10	BASIC	090
BA	BUMBOOG.DAT	BUMBOOG.PLA DATA FILE	DEMO	10	BASIC	056
BA	BUMBOOG.PLA	MUSIC BY POKEY PLAYER	DEMO	10	BASIC	086
BA	CAMEL	TAKE A WALK	STRAT	7	BASIC	070
BA	COMMANDS	ABBREVIATIONS--ATARI	PRG AID	8	BASIC	015
BA	DRAWGTIA	DRAW WITH JOYSTICK	DEMO	8	BASIC	017
BA	GTIADEMO	GOOD EFFECTS	DEMO	9	BASIC	010
BA	MAGIC	3-D EFFECTS	DEMO	10+	BASIC	019
BA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	021
BA	PIXELSAV	RETRACES YOUR PATH	DEMO	8	BASIC	010
BA	POLYS	USE WITH ADV MUSIC SYS	DEMO	10	BASIC	027
BA	RNDNUMBR.REV	PICKS RANDOM NUMBER	DEMO	8	BASIC	008
BA	SCREENDU.MP	SCREEN TO PRINTER	DEMO	8	BASIC	011
BA	SPASOUND	SPACE SOUNDS	DEMO	6	BASIC	007
BA	THEARC	SHORT DEMO	DEMO	7	BASIC	004
BA	THUNDERB.IRD	BREAKOUT TYPE	GAME	10	BASIC	067

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CA	ADDITION	LEARN TO ADD	EDUC	9	BASIC	021
CA	AUTORUN.MKR	MAKES AN AUTORUN.SYS	UTIL	10	BASIC	026
CA	BOGGLER	5 IN ROW WINS-2 PLAYER	GAME	8	BASIC	026
CA	CLOSEOUT	GO SHOPPING FOR DOTS	GAME	7	BASIC	056
CA	COUNT	LEARN TO COUNT	EDUC	9	BASIC	029
CA	FILLERUP.BAS	BUILD WATER RESERVOIRS	GAME	10	BASIC	067
CA	FILLERUP.OBJ	BUILD WATER RESERVOIRS	GAME	10	OBJ	026
CA	HARVY.OBJ	GRAB #'S SHOOT WALLS	GAME	10	OBJ	013
CA	HOLLYMED.OBJ	MUSIC PLUS 3-D ROADWAY	DEMO	9	OBJ	063
CA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	011
CA	MUNCHERS	AVOID THE MUNCHERS	GAME	9	BASIC	048
CA	SIMON	FOR PRE SCHOOL AGE	GAME	8	BASIC	015
CA	SORT	SORTING ROUTINE	UTIL	10	BASIC	007
CA	STUNTMAN	MAN IN BUILDING	GAME	7	BASIC	054
CA	SUBTRACT	LEARN TO SUBTRACT	EDUC	9	BASIC	021
CA	SYSTAT	CHECK OUT YOUR SYSTEM	UTIL	9	BASIC	031
CA	WRITER	PRE SCHOOL TYPE TUTOR	EDUC	9	BASIC	009

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DA	BLOCKADE	BLOCK YOUR PARTNER	GAME	8	BASIC	021
DA	CHOPSTKS.MUS	EVERYONE KNOW THIS	DEMO	8	BASIC	012
DA	CRICKETS	ANOTHER GREAT!!!	GAME	10+	BASIC	095
DA	DEFEND.OBJ	DEFEND YOUR PLANE	GAME	10+	OBJ	013
DA	EGGS	CATCH THEM OR SPLATTT!	GAME	8	BASIC	052
DA	HOUSSETOP.MBD	DATA FILE FOR SANTAMUS	DEMO		BASIC	005
DA	JAZZ.MUS	READ THE TITLE	DEMO	8	BASIC	015
DA	KNIGHT	YES THERE IS A WAY OUT	GAME	8	BASIC	091
DA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	034
DA	SANTA	DATA FILE FOR SANTAMUS	DEMO		BASIC	056
DA	SANTA.MUS	ONE OF THE BEST	DEMO	10+	BASIC	056
DA	TIMETRLS	DRIVE A RACECAR	GAME	10+	BASIC	058

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FA	README.1ST	READ BEFORE USING !!!	INFO		BASIC	008
FA	ATARI3D.CAS	CASSETTE VERSION	DEMO	10	BASIC	014
FA	ATARI3D.DSK	MERGE WITH SHAPTAB	DEMO	10	BASIC	004
FA	ATARI3D.SHP	DATA FILE FOR ATARI3D	UTIL	10	BASIC	004
FA	DATAMAKR.CAS	DATA GENERATOR	UTIL	10	BASIC	010
FA	DEMG9.CAS	CASSETTE VERSION	DEMO	10	BASIC	006
FA	DEMG9.DSK	MERGE WITH SHAPTAB	DEMO	10	BASIC	004
FA	DEMG9.SHP	DATA FILE FOR DEMG9	UTIL	10	BASIC	002
FA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	012
FA	SHAPEDIT	CREATE YOUR OWN SHAPES	UTIL	10	BASIC	052
FA	SHAPEDIT.CAS	CASSETTE VERSION	UTIL	10	BASIC	067
FA	SHAPEDIT.DOC	SHAPEDIT INSTRUCTIONS	INFO	10		053
FA	SHAPEDIT.USR	DATA FILE FOR SHAPEDIT	UTIL	10	BASIC	005
FA	SHAPTAB	MASTER SHAPTAB FILE	UTIL	10	BASIC	007
FA	SHAPTAB.DOC	SHAPTAB INSTRUCTIONS	INFO	10		118
FA	SHAPTAB.LST	SHAPTAB LISTED FILE	UTIL	10	BASIC	007
FA	USESHPA.DOC	HOW TO USE SHAPE	INFO	10		030

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
GA	ALOAD.32K	AUTOLOAD 32K	UTIL	10	BAS A+	003
GA	ALOAD.40K	AUTOLOAD 40K	UTIL	10	BAS A+	003
GA	ALOAD.48K	AUTOLOAD 48K	UTIL	10	BAS A+	003
GA	ALOAD.ASM	AUTOLOAD ASM	UTIL	10	BAS A+	051
GA	BPATCH.SAV	UPDATE BASIC A+ TO 3.4	UTIL	10+	BAS A+	025
GA	BRUSH.DEM	SHOW AND TELL	DEMO	10	BAS A+	006
GA	DECHEX.DEM	DEC TO HEX CONVERSION	UTIL	10	BAS A+	003
GA	DEMO.COM	COMMAND FILE	UTIL	10	BAS A+	048
GA	DEMO.SAV	INSTRUCTIONS	INFO	10	BAS A+	006
GA	DUPFILE.COM	COMMAND FILE	UTIL	10	BAS A+	013
GA	EGGS.DEM	USES JOYSTICK	GAME	10	BAS A+	021
GA	FREUD.DEM	ANALYSIS ALA ELIZA	GAME	10	BAS A+	074
GA	HEXDEC.DEM	HEX TO DEC CONVERSION	UTIL	10	BAS A+	003
GA	MDRIVER.ASM	MEMORY(M:) AS A DEVICE	UTIL	10	BAS A+	066
GA	MDRIVER.COM	COMMAND FILE	UTIL	10	BAS A+	002
GA	PHOOK.ASM	HOOKS PRINTER TO SCRIN	UTIL	10	BAS A+	020
GA	PHOOK.COM	COMMAND FILE	UTIL	10	BAS A+	002
GA	PICADV.DEM	SMALL ADVENTURE	STRAT	10	BAS A+	127
GA	RENUM.32K	RENUMBER 32K	UTIL	10	BAS A+	005
GA	RENUM.40K	RENUMBER 40K	UTIL	10	BAS A+	005
GA	RENUM.48K	RENUMBER 48K	UTIL	10	BAS A+	005
GA	RENUMBER.DEM	RENUMBER PROGRAM	DEMO	10	BAS A+	065
GA	SHIP.DEM	SHOW AND TELL	DEMO	10	BAS A+	009
GA	STOMP.DEM	ARROW KEYS W/O CONTRL	GAME	10	BAS A+	065
GA	XREF.DEM	VAR CROSS REFERENCE	UTIL	10	BAS A+	043

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
HA	ATARI400	DRAW ATARI 400	DEMO	10	BASIC	045
HA	BATGIRL.PTR	USE YOUR PRINTER	DEMO	8	BASIC	048
HA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	015
HA	NUDE.PTR	ALMOST 'X' RATED	DEMO	10	BASIC	083
HA	RAQUEL.PTR	USE YOUR PRINTER	DEMO	9	BASIC	073
HA	SCIQUIZ	QUIZ TYPE GAME	EDUC	8	BASIC	049
HA	SPEAKER	INTERNAL SPEAKER DEMO	DEMO	7	BASIC	006
HA	STARBLAS.ER	DEFENDER TYPE	GAME	9	BASIC	053
HA	TIGER.BAS	JOYSTICK REQUIRED	GAME	7	BASIC	058
HA	WILDWEST	USE YOUR PADDLES	GAME	10+	BASIC	065

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
IA	README.1ST	READ BEFORE USING TERM	INFO	10	BASIC	007
IA	AUTORUN.BBS	TERMINAL AUTORUN.SYS	UTIL	10	OBJ	005
IA	CHEMICAL.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	COMPUTER.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	DEFLECT	KEYBOARD BOUNCE	GAME	9	BASIC	024
IA	EZTRANS	ENERGIZE TRANSPORTER	DEMO	10+	BASIC	043
IA	FANCY.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	FONTFLIP	CHANGE FONTS EASILY	UTIL	10+	BASIC	017
IA	FUNC	FILE FOR TERMINAL PROG	UTIL	10	FILE	002
IA	GREEK.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	HEBREW.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	HELP	FILE FOR TERMINAL PROG	UTIL	10	FILE	005
IA	HIERO.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	JERRY.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	JIGSAW.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	JUMPMACK	LADDER TYPE/JOYSTICK	GAME	9	BASIC	032
IA	MATH.FNT	DATA FILE FOR FONTFLIP	UTIL	10	FILE	009
IA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	016
IA	MINIAMIS.BBS	TERMINAL PROGRAM	BASIC	10	BASIC	065
IA	MINIAMIS.DOC	INSTRUCTIONS	INFO	9	FILE	015
IA	MXLIST.BAS	MX PRINTER PROG	UTIL	8	BASIC	024
IA	MXLIST.LST	LISTED VERSION MXLIST	UTIL	8	BASIC	024
IA	MXLIST.OBJ	MACH LANG MXLIST	UTIL	8	OBJ	061
IA	NEU	FILE FOR TERMINAL PROG	UTIL	10	FILE	002
IA	ONEON.ONE	BOUNCE TYPE/2 PLAYER	GAME	9	BASIC	032
IA	STARTUP.BBS	PART OF TERMINAL PROG	UTIL	10	OBJ	007
IA	VARIABLE.LST	LIST VARIABLES P/D	UTIL	9	BASIC	013
IA	WELC	FILE FOR TERMINAL PROG	UTIL	10	FILE	003

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
JA	ANTI	DATA FILE	GAME	8	FILE	005
JA	BANK	DATA FILE	GAME	8	FILE	005
JA	BOAT	DATA FILE	GAME	8	FILE	005
JA	BRID	DATA FILE	GAME	8	FILE	005
JA	CIRC	DATA FILE	GAME	8	FILE	005
JA	COND	DATA FILE	GAME	8	FILE	005
JA	FIRE	DATA FILE	GAME	8	FILE	005
JA	GOLF	DATA FILE	GAME	8	FILE	005
JA	HAMB	DATA FILE	GAME	8	FILE	005
JA	HOUS	DATA FILE	GAME	8	FILE	003
JA	INFL.CAS	CASSETTE VERSION	GAME	8	BASIC	178
JA	INFLATIO	1-6 PLAYERS/JOYSTICK	GAME	8	BASIC	157
JA	MALL	DATA FILE	GAME	8	FILE	003
JA	MENU	INSTRUCTIONS & RULES	INFO	8	BASIC	046
JA	MINE	DATA FILE	GAME	8	FILE	004
JA	PICT	DATA FILE	GAME	8	FILE	004
JA	PICT.SVE	CREATE PICTURES	UTIL	9	BASIC	005
JA	REAC	DATA FILE	GAME	8	FILE	005
JA	REFI	DATA FILE	GAME	8	FILE	005
JA	REST	DATA FILE	GAME	8	FILE	005
JA	TRAI	DATA FILE	GAME	8	FILE	005
JA	TRUC	DATA FILE	GAME	8	FILE	005

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
KA	ANIMAL	GREAT GAME FOR ALL	GAME	10	BASIC	039
KA	ANIMAL.DAT	SAVE YOUR MASTER FILE	DATA	10	FILE	002
KA	ANIMAL.INS	INSTRUCTIONS	INFO		BASIC	009
KA	ANIMDAT.STA	INITIALIZE DATA FILE			BASIC	005
KA	JUGGLER	JUGGLE BALLS	GAME	6	BASIC	044
KA	LAUNCH	SHOOT SPACESHIPS	GAME	9	BASIC	060
KA	LUNARLDR	LAND YOUR SPACESHIP	GAME	6	BASIC	048
KA	MENU	DISK DIR	UTIL	6	BASIC	005
KA	PANTHER.PTR	PICTURE OF PANTHER	DEMO	6	BASIC	038
KA	POLYGON.FIL	STRANGER BY THE RIVER	DEMO	8	BASIC	031
KA	SPACECDT	SAVE THE PEOPLE	GAME	8	BASIC	071
KA	SPIDER	DRAW WITH JOYSTICK	DEMO	9	BASIC	016
KA	STELLAR	SHOOT THE INVADERS	GAME	7	BASIC	050
KA	YAHTZEE	GOOD WORKING VERSION	GAME	10	BASIC	068

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
LA	BEE.V	MUSIC	DEMO	10	FILE	013
LA	BLUES.V	MUSIC	DEMO	10	FILE	001
LA	BUMBOOG.V	MUSIC	DEMO	10	FILE	016
LA	CAPRICIO.V	MUSIC	DEMO	10	FILE	017
LA	DCOMP	READ INSTRUCTIONS	UTIL	10	BASIC	041
LA	DPLAYER	POKEY PLAYER MAY 1983	UTIL	10	BASIC	022
LA	DPLAYER.DAT	DATA FILE	DATA		FILE	007
LA	EDITOR	REVISED MAY 1983	UTIL	10	BASIC	142
LA	FACE.V	MUSIC	DEMO	10	FILE	003
LA	HBDAY.V	MUSIC	DEMO	10	FILE	002
LA	HIGHNOON.V	MUSIC	DEMO	10	FILE	008
LA	IBELIEVE.V	MUSIC	DEMO	10	FILE	004
LA	IFYOUCAN.V	MUSIC	DEMO	10	FILE	003
LA	INFO	INFORMATION	INFO	10	BASIC	005
LA	INFO.TXT	DATA FILE	DATA	10	FILE	000
LA	LONDON.V	MUSIC	DEMO	10	FILE	003
LA	LOVING.V	MUSIC	DEMO	10	FILE	007
LA	MANGER.V	MUSIC	DEMO	10	FILE	002
LA	MATHILDA.V	MUSIC	DEMO	10	FILE	003
LA	MEANDBOB.V	MUSIC	DEMO	10	FILE	006
LA	MUSETTE.V	MUSIC	DEMO	10	FILE	003
LA	OLITTLE.V	MUSIC	DEMO	10	FILE	002
LA	POLKSALA.V	MUSIC	DEMO	10	FILE	003
LA	PPDEMO	POKEY PLAYER DEMO	DEMO	10+	BASIC	041
LA	RITWRONG.V	MUSIC	DEMO	10	FILE	004
LA	ROCKCAS.V	MUSIC	DEMO	10	FILE	011
LA	SCIPPIO.V	MUSIC	DEMO	10	FILE	005
LA	SHERIFF.V	MUSIC	DEMO	10	FILE	004
LA	STORYEND.V	MUSIC	DEMO	10	FILE	005
LA	SUNSHINE.V	MUSIC	DEMO	10	FILE	008
LA	TENDER.V	MUSIC	DEMO	10	FILE	002
LA	TEXAS.V	MUSIC	DEMO	10	FILE	004
LA	VMERGE	READ INSTRUCTIONS	UTIL	10	BASIC	005
LA	WABASH.V	MUSIC	DEMO	10	FILE	003
LA	WALL.V	MUSIC	DEMO	10	FILE	009
LA	WATER.V	MUSIC	DEMO	10	FILE	003
LA	WHYME.V	MUSIC	DEMO	10	FILE	003
LA	YESTERDY.V	MUSIC	DEMO	10	FILE	003

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
MA	BASECVT	CONVERT BASE #'S	BASIC	10	UTIL	032
MA	DEFLECTR	USE / KEY TO DEFLECT	GAME	9	BASIC	024
MA	DIGIDRFT	USE J/STK TO DRAW	UTIL	10+	BASIC	071
MA	FLAG	US FLAG WITH MUSIC	DEMO	8	BASIC	022
MA	GRENHOLE	GTIA GREEN HOLE	DEMO	10	BASIC	011
MA	HAWKS	LOOKING FOR FOOD	GAME	8	BASIC	053
MA	HEARTS	CHANGE THEIR POSITION	GAME	6	BASIC	036
MA	HORSRACE	NO GRAPHICS	GAME	5	BASIC	024
MA	LINEDLT.LST	MASS DELETE LINES	UTIL	10	BASIC	006
MA	MENU	USE JOYSTICK TO RUN	UTIL	6	BASIC	011
MA	NSLAUGHT.OBJ	SPACE GAME	GAME	10+	OBJ	042
MA	OTHELLO	CAPTURE OPPONENT	GAME	8	BASIC	047
MA	STATES	STATES AND CAPITALS	EDUC	10+	BASIC	060
MA	TRACE.LST	TRACE THRU PROGRAMS	UTIL	10	BASIC	034

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
NA	BALL	GTIA BALL	DEMO	7	BASIC	009
NA	BLUES	FROM ATARI REF MANUAL	DEMO	7	BASIC	015
NA	CHICFAST	CHICKEN FAST VERSION	GAME	10+	BASIC	047
NA	CRYSTAL	GTIA CRYSTAL	DEMO	6	BASIC	015
NA	CURSOR	BLINKING CURSOR	UTIL	8	BASIC	004
NA	FAUCET	GTIA WATER FAUCET	DEMO	10+	BASIC	029
NA	JELLYFSH	DON'T EAT JELLYFISH	GAME	9	BASIC	031
NA	LONEAGLE	SAVE THE HORSES	GAME	8	BASIC	050
NA	LRN2TYPE	FOR BEGINNERS	EDUC	8	BASIC	014
NA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	011
NA	MICROIDS	NEEDS INSTRUCTIONS	GAME	0	BASIC	040
NA	OLDMAC	J/STK BUTTON IF RIGHT	EDUC	10+	BASIC	096
NA	PEEKER	PEEK VALUES OF RAM	UTIL	10	BASIC	033
NA	PEPPER	MUSIC	DEMO	7	BASIC	053
NA	RING	GTIA RING	DEMO	7	BASIC	009
NA	TRAGEDY	DICE GAME	GAME	8	BASIC	046

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
QA	BESSEL.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	DOLLAR.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	EYES.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	MENU	MAIN PROGRAM FOR PIC	DEMO	10	BASIC	020
QA	MUSIC.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	ROCKY.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	SCROLL	ONE PICTURE LOAD FILE	UTIL	10	BASIC	018
QA	SHIFT.ASM	SUBFILE FOR SCROLL	UTIL	10	BASIC	002
QA	SPIRAL.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	TEQUILA.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	UNCLESAM.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062
QA	WILLIAM.PIC	PICTURE DATA FILE	DEMO	10	BASIC	062

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
PA	ADVENTUR	ADVENTURE GAME	STRAT	9	BASIC	099
PA	AMORTIZE	FIGURE MONTHLY PAYMTS	UTIL	8	BASIC	040
PA	ASTROSTM	GET TO OTHER SIDE	GAME	7	BASIC	021
PA	BIO.BAS	BIORHYTHM CHART	DEMO	7	BASIC	030
PA	FLAKE	RANDOM SNOWFLAKE	DEMO	6	BASIC	008
PA	LASERGN2	SHOOT THE SPACESHIP	GAME	8	BASIC	067
PA	LIVEWIRE.OBJ	TEMPEST TYPE-AMAZING!	GAME	10+	OBJ	037
PA	MATHFUN	GOOD MATH TEACHER	EDUC	10+	BASIC	042
PA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	028
PA	RENUM.LST	RENUMBER YOUR PROGRAM	UTIL	9	BASIC	014
PA	RESCUE	LAND THE SPACESHIP	GAME	8	BASIC	061
PA	ROADBLCK	BLOCK YOUR OPPONENT	GAME	10	BASIC	041
PA	SHELL	SORT ROUTINE	UTIL	7	BASIC	007

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
QA	BOXDEMO	GOOD EFFECTS	DEMO	8	BASIC	008
QA	DETECTIVE	SOLVE THE CRIME	STRAT	9	BASIC	070
QA	DOGBITE	YOU ARE A MAILMAN	STRAT	7	BASIC	064
QA	ELECTRIC	RUN ELECTRIC COMPANY	STRAT	8	BASIC	091
QA	HOPPER.OBJ	SELECT CHANGES SPEED	GAME	10+	OBJ	056
QA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	028
QA	OCTADRAW	VERY INTERESTING ONCE	DEMO	8	BASIC	015
QA	PMEDITOR	CREATE PLAYERS (PM)	UTIL	10+	BASIC	020
QA	STARWARP	ADVENTURE TYPE	STRAT	8	BASIC	150
QA	WAVES	VERY SIMPLE	DEMO	3	BASIC	004

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
RA	CUBE3D	3D CUBES	DEMO	7	BASIC	015
RA	GIGGLE	RANDOM DOTS	DEMO	5	BASIC	006
RA	HORSE1	RUNNING HORSES	DEMO	10+	BASIC	047
RA	LANES	PM DEMO	DEMP	7	BASIC	033
RA	LOGO1	ATARI LOGO	DEMO	10	BASIC	016
RA	MAZE	FIND YOUR WAY THROUGH	GAME	7	BASIC	057
RA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	031
RA	PMPRIOR	PM PRIORITY	DEMO	9	BASIC	007
RA	RIGHT40	40 COLUMN TEXT	DEMO	10	BASIC	022
RA	SCROLL.BAS	FINE SCROLLING	DEMO	10+	BASIC	032
RA	SOUNDEXP	SEE 7/83 COMPUTE-INST.	UTIL	6	BASIC	058
RA	STARSHOT	USE YOUR PADDLES	GAME	7	BASIC	129
RA	SUPCOMP3	COMPARE FILES	UTIL	10+	BASIC	034

*** MACE PROGRAM LIBRARY ***

DISK	PROGRAM	DESCRIPTION	GROUP	RATING	TYPE	SECTORS
SA	BLACKBOX	LOCATE THE ATOMS	STRAT	5	BASIC	062
SA	BURP	*** BE CAREFUL !! ***	UTIL	10	BASIC	011
SA	CIRCLES	ONE LINER	DEMO	7	BASIC	002
SA	CITY	ONE LINER	DEMO	7	BASIC	003
SA	CLOCKCOM	WORKING CLOCK	UTIL	10	BASIC	017
SA	CREATOR	RECREATE OBJECT FILE	UTIL	10	BASIC	019
SA	DICEROLL	VOICEBOX REQUIRED	DEMO		BASIC	045
SA	DIETY	RECREATE SECTORS	UTIL	10	BASIC	025
SA	EIGHTBAL	HIT THE BILLIARD BALL	GAME	5	BASIC	036
SA	FIFTEEN	PUT IN ORDER	STRAT	7	BASIC	030
SA	MENU	DISK DIR LOAD/GO	UTIL	9	BASIC	031
SA	MSGDEMO	CREATE MESSAGES	UTIL	10	BASIC	033
SA	RENUMBER	GREAT RENUMBER PROG.	UTIL	10+	BASIC	060
SA	STARMCH	YOU ARE IN CHARGE	STRAT	6	BASIC	110
SA	TYPO	CHECK ANTIC TYPING	UTIL	10	BASIC	010

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AL	205-979-0513	AMIS	B.A.C.E.	L
CA	213-271-0224	AMIS	TIME ZONE	?
CA	213-783-8373	AMIS	L.A.A.C.E.	*
CA	408-253-5216	AMIS	GFX	*
CA	408-298-6930	AMIS	IBBS	L
CA	408-732-1079	?	VANVISION	*
CA	415-527-8276	ARMU	SYNAPSE	L
CA	619-447-8143	AMIS	S.D.A.C.E.	L
CA	714-731-6523	?	A.C.A.O.C.	?
CA	714-973-2086	ARMU	ORANGE CTY.	*
CA	805-498-2508	AMIS	THOUSAND OAKS?	
CA	805-528-0957	?	SLO COUNTY	*
CA	805-544-8173	?	SLOPOKES	*
CA	916-363-3304	AMIS	A.C.C.E.S.S.	*
CA	916-487-3679	AMIS	S.A.C.S BBS	L
CO	303-221-1779	TARI	POOR RICHARD	L
CO	303-758-2927	AMIS	DENVER	?
CO	303-758-6233	AMIS	DENVER	L
DC	202-276-8342	ARMU	WASHINGTON	*#
DC	202-364-8617	AMIS	ALADDINS LAMP?	&
GA	404-252-9438	ATAB	ROD R.	#
IA	515-961-8881	AMIS	MID AMERICA	*
IL	312-620-6441	AMIS	S.C.A.T.	*
IL	312-789-0499	RBBS	CHICAGO	*
IL	312-789-3610	AMIS	CHICAGO	*
IL	312-889-1240	AMIS	C.L.A.U.G.	*
IL	312-893-6884	?	FoReM	*
IL	312-925-2929	?	WIZ-BANG S.	*
IN	219-665-2650	AMIS	LAND O LAKES	*
IN	219-665-6225	AMIS	ANGOLA BBS	L
LA	504-273-3116	RBBS	BATON ROUGE	*
LI	516-666-2148	?		L
MA	617-266-7789	BULT	BOSTON BULLET*	
MA	617-595-0211	AMIS	NORTH SHORE	*&
MA	617-667-7388	AMIS	MACRO EXCH.	*
MD	301-974-4987	TARI	SEVERNA PARK	*
MD	301-587-2132	ARMU	COMPUTER AGE	L
MD	301-871-5370	?	RICKY MOOSE	?

MD	301-972-4444	AMIS	WARLORDS	?
MI	313-274-3940	AMIS	M.A.C.E. W.	*
MI	313-352-8271	?	SY-DRAFT	*
MI	313-427-1402	AMIS	CAPTAIN KIRK	L
MI	313-538-0197	AMIS	DARTBOARD	L
MI	313-544-0885	AMIS	M.A.C.E.	*#
MI	313-547-7903	?	CPU AT & AP	?
MI	313-759-6569	CBBS	ROYAL OAK	*R
MI	313-771-4126	AMIS	St C1 SHORES	L
MI	313-978-8087	AMIS	A.R.C.A.D.E.	*
MI	517-371-4321	AMIS	C.H.A.O.S.	*
MI	616-241-1971	AMIS	G.R.A.S.S.	*
MO	314-432-7034	AMIS	ComputerCave	L
MO	314-535-3799	?	AURA BBS	?
MO	314-928-0598	?	TERMINAL END	*
NC	919-692-7710	AMIS	A.C.C.E.S.S.	*
NJ	201-339-7407	AMIS	BAYONNE	L
NJ	609-267-7825	TARI	BOB ALLEGER	L#
NJ	609-924-5875	TARI	ELECT. CANDY	L
NV	702-733-9488	AMIS	LAS VEGAS	L
NY	212-241-8965	AMIS	SPIDER WEB	*
NY	212-927-6919	AMIS	DANTE'S INF.	*
NY	212-767-6633	AMIS	INFO 800	*
NY	212-798-2027	ARMU	WEEKENDS	L
NY	212-860-4940	AMIS	LATE NIGHT	L
OH	216-271-9273	AMIS	GARFIELD	L
OH	216-439-5543	AMIS	NORTH COST	L
OH	419-423-0206	AMIS	FLAGCITY	*
OH	614-476-2035	?	ATRPOST DEMO	*
OK	405-636-0218	AMIS	SOFT.SAFARIS	*
OK	405-681-6929	AMIS	TEBBTOWI	?
OK	405-685-2027	AMIS	SW. SAFARIS	L
OK	405-722-5056	ARMU	GREKELCOM	?
OK	918-836-4742	AMIS	SAT.EVE ONLY	L
OR	503-343-4352	ARMU	A.C.E.	?
PA	215-333-3753	AMIS	J R'S BBS	*
PA	215-398-3937	RBBS	ALLENTOWN	*
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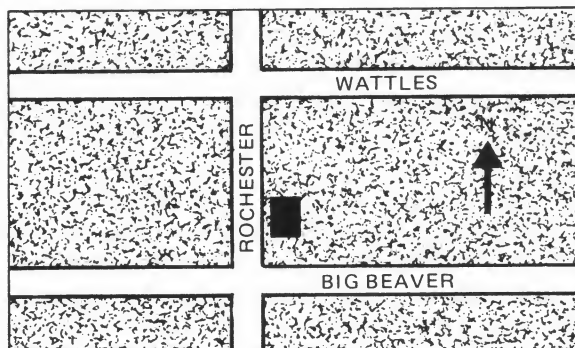
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ABC's of PM GRAPHICS

by Mark Davids

Part I

Most programs written for ATARI use player missile graphics capabilities that are built into the computer. The problem with most articles is that they assume that you already know how to use PM graphics. Creative Computing had an excellent article (Sept.81 by Small&Small) describing how to get started. Compute has had a number of articles giving hints on using PM graphics. This program and article is a tutorial for the person who understands ATARI basic and wishes to get started with PM graphics. After reviewing this program, even a novice should be able to put new colours and shapes onto the screen. As you study this program, pay particular attention to the REM's.

The first step is to set aside memory for the players and missiles. The easiest method seems to be to use strings. This string technique first appeared in an article by Sheldon Leemon who gave credit to Marcus Watts.

This program will produce players with 2 line resolution. (The minimum height for a player is the same as a plotted point in GR.7.) The PM map should start on a 1 K memory boundary. Line 25010 insures that the address of PM\$ will be on the boundary. MIS\$ is the string that holds the missiles shapes, P0\$ holds shape of player 0, P1\$ holds the shape of player 1, etc. Line 25020 clears all players and missiles by filling the strings with blank spaces.

Next point to our player area, indicate 2 line resolution and turn on PM graphics. The POKE 623,17 does 2 things: sets priority for the players and missiles and groups the missiles as a 5th player.

Now that the requirements are met, we can make some shapes. (See figure 1) These will be the shapes of our players. The collection of darkened squares is called a BITMAP. Each shape has its own bitmap. Notice that the ball is 7 squares tall. Notice that the string BALL\$ is dimensioned to 7. Look closely at the bitmap for the ball. Add the values of the darkened squares in the top row. The first value in BALL\$ is the sum of these squares. The darkened squares on the 2nd row add up to give the value of the 2nd position in BALL\$, etc. Line 25110 shows a simple way to put the shape into the string (BALL\$).

Lines 25130-25180 use the same technique for 3 new shapes. You may define as many shapes as you need. You may put them onscreen, later, whenever and wherever you want them. Use your graph paper to build your own shapes. Each shape may only be 8 squares across, but may be as tall as 128 squares. Use the technique shown here to build the shapes into strings. Use lines 25200-25299 to make your own shapes.

Let's put some shapes on the screen. Line 110 makes player 0 colour 1 (see table 9-3 on p.50 of ATARI Ref. Manual) with a medium brightness. Line 120 places the bitmap halfway across the screen (see fig.2). Line 130 makes the player narrow. Line 140 puts the string BALL\$ into the player string P0\$. The vertical position of the ball depends on where the shape is put into the player string (P0\$) (see fig.3).

Lines 210-240 put the pink man on the screen. Lines 310-340 put the blue box on the screen. Lines 410-440 put the white bird onto the screen. Study these lines until you know exactly what they do. Lines 500-840 describe how to change the horizontal position of a player. Lines 1000-1150 describe each step in drawing the tall, green building.

I hope that this program will allow you to start to play with player missile graphics. Please write any comments or suggestion to me. I will try to answer your questions in the next issue. Stay tuned for PART II!

PLAYER MISSILE DEMO

```

0 REM * PMDEMO (7/27/83)
5 REM * PART I (OF 3)
8 REM * BY M.DAVIDS
10 GOTO 25000:REM * SETUP PM GRAPHICS
100 ? :? :? :LIST 110,150
110 POKE COL0,1*16+8:REM * MED.YELLOW
120 POKE HP0,128:REM * LEFT EDGE OF BITMAP AT HOR. CENTER OF TEXT
AREA
130 POKE W0,0:REM * REGULAR WIDTH
140 P0$(17,23)=BALL$:REM * PUT BALL ON SCREEN AT TOP OF TEXT AREA
150 GOSUB WAIT:REM * WAIT FOR START AT LINE 31010
200 ? :LIST 210,250
210 POKE COL1,4*16+10:REM *BRIGHT PINK
220 POKE HP1,48:REM * LEFT EDGE OF BITMAP AT LEFT EDGE OF TEXT AREA
230 POKE WP1,1:REM * DOUBLE WIDTH
240 P1$(64,77)=MAN$:REM * PUT MAN ON SCREEN AT VERTICAL MID.OF TEXT
AREA
250 GOSUB WAIT:REM * WAIT FOR START AT LINE 31010
300 ? :LIST 310,350
310 POKE COL2,6*16+8:REM * MED BLUE
320 POKE HP2,48:REM * LEFT EDGE OF BITMAP AT LEFT EDGE OF TEXT AREA
330 POKE WP2,3:REM * QUAD WIDTH
340 P2$(107,112)=BOX$:REM * PUT BOX ON SCREEN AT VERTICAL BOT.OF TEXT
AREA
350 GOSUB WAIT:REM * WAIT FOR START AT LINE 31010
400 ? :LIST 410,450
410 POKE COL3,0*16+14:REM *BRIGHT GRAY (WHITE)
420 POKE HP3,156:REM * LEFT EDGE OF BITMAP AT 3/4 FROM LEFT EDGE OF
TEXT AREA
430 POKE WP3,1:REM * DOUBLE WIDTH
440 P3$(88,91)=BIRD$:REM * PUT BIRD ON SCREEN 3/4 DOWN ON TEXT AREA
450 GOSUB WAIT:REM * WAIT FOR START AT LINE 31010
500 ? :? "NOTE THAT WE HAVE 4 DIFFERENT SHAPES AND 4 DIFFERENT COLOURS
ON THE SCREEN."
510 ? "THERE ARE 2 EASY METHODS TO REMOVE THE PLAYERS FROM THE SCREEN."
520 ? :? "1. POKE THE HORIZONTAL POSITION ADDRESS TO ZERO. (
ergo POKE HP0,0)"
525 ? :LIST 550:~? :? " KEEP YOUR EYE ON THE BALL"
530 ? :? :? " PUSH THE OPTION KEY TO DO THIS."
540 IF PEEK(53279)<>3 THEN 540:REM * WAIT FOR OPTION KEY
550 POKE HP0,0:REM * MOVE YELLOW BALL TO THE FAR LEFT EDGE (OFF THE
SCREEN)
560 ? CHR$(125)
600 ? :? :? " HOW DO WE GET IT BACK ?"
610 ? :? " LETS POKE THE HORIZONTAL ADDRESS WITH 128 ( ergo POKE
HP0,128 ) ."
620 ? :? :LIST 650:~? :? " PUSH SELECT KEY TO MOVE THE BALL BACK"
640 IF PEEK(53279)<>5 THEN 640
650 POKE HP0,128:REM * MOVE IT BACK *
700 ? CHR$(125):~? :? "WAS THAT FAST ???? "
710 ? "TO CHANGE THE HORIZONTAL POSITION OF PLAYER 0, JUST CHANGE THE

```

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VALUE IN HP0"
720 ? :? :LIST 750: ? :? "    PUSH THE START KEY TO SEE THIS."
740 IF PEEK(53279)<>6 THEN 740
750 FOR A=0 TO 255:POKE HP0,A:NEXT A
760 ? :? " SEE IF YOU CAN FIGURE OUT HOW TO MOVE THE BALL IN THE
OPPOSITE DIRECTION."
770 ? "  SORRY, BUT I'M NOT GOING TO HELP YOU WITH THIS. WRITE DOWN
YOUR ROUTINE AT LINE 840 . "
780 ? :? "    PUSH SELECT TO CONTINUE."
790 IF PEEK(53279)<>5 THEN 790:REM *  WAIT FOR SELECT KEY
800 ? CHR$(125):? :? " DOES YOUR ROUTINE LOOK LIKE THIS ?"
810 ? :? :LIST 840
840 FOR A=255 TO 0 STEP -1:POKE HP0,A:NEXT A
850 ? :? :? "SEE IF YOU CAN MAKE THE OTHER OBJECTS MOVE (BOTH WAYS)
ACROSS THE SCREEN."
860 ? :? :? "USE LINE NUMBERS BETWEEN 900 AND 990  FOR YOUR ROUTINES."
870 GOSUB WAIT
1000 ? :? :? "WELL, HOW TALL CAN A PLAYER BE ?"
1010 ? :? "TALLER THAN THE SCREEN WILL SHOW !!"
1020 ? :? "EACH PLAYER LIVES IN A STRING THAT IS 128 BYTES LONG."
1030 ? :? "THE TOP OF THE SCREEN IS POSITION 17  IN THE STRING."
1040 ? :? "THE BOTTOM OF THE STRING IS AT POS.  112 OF THE STRING."
1050 ? :? "LETS SEE HOW TO DRAW A BUILDING ON THE SCREEN."
1060 GOSUB WAIT
1070 ? :? :? "    FIRST ERASE THE BIRD."
1080 LIST 1090:GOSUB WAIT
1090 P3$=PM$
1110 ? :? "    HERE IS OUR STRUCTURE."
1120 LIST 1130,1140:GOSUB WAIT
1130 POKE COL3,12*16+2:REM *DARK GREEN
1140 FOR A=112 TO 17 STEP -1:P3$(A,A)=CHR$(255):NEXT A:REM * ALL BITS
ON !
1150 ? :? "    NOW MAKE IT WIDER." :? :? :LIST 1160:GOSUB WAIT
1160 POKE WP3,3:REM * EXTRA WIDE *
1170 ? :? "    ADD SOME WINDOWS." :? :? :LIST 1180:GOSUB WAIT
1180 FOR A=20 TO 100 STEP 5:P3$(A)=CHR$(165):P3$(A+1)=CHR$(165):NEXT A
1190 ? :? :? "    END OF PART I"
1200 ? :? :? "    (TO BE CONTINUED)":END
25000 REM * SET UP PM GRAPHICS *
25005 GRAPHICS 0:POKE 709,12:POKE 710,0:POKE 712,4:REM * MAKE WHITE
LETTERS ON BLACK SCREEN & GREY BORDER
25006 POKE 752,1:REM * CURSOR OFF
25010 DIM
D$(1),FILL$((INT(ADR(D$)/1024)+1)*1024-ADR(D$)-1),PM$(384),MIS$(128),P0
$(128),P1$(128),P2$(128),P3$(128)
25020
PM$=CHR$(0):PM$(384)=CHR$(0):PM$(2)=PM$:MIS$=PM$:P0$=PM$:P1$=PM$:P2$=PM
$:P3$=PM$:REM * CLEAR ALL STRINGS
25030 POKE 54279,ADR(PM$)/256:REM * POINT TO START OF PM AREA
25040 POKE 559,46:REM * CHOOSE 2 LINE RESOLUTION FOR PLAYERS
25050 POKE 53277,3:REM * ENABLE PM GRAPHICS
25060 POKE 623,17:REM * SET PRIORITY ADDRESS (ALSO GROUP MISSILES AS
5TH PLAYER )
25070 COL0=704:COL1=705:COL2=706:COL3=707:REM * COLOR ADDRESSES FOR

```


PLAYERS

```

25080 WP0=53256:WP1=53257:WP2=53258:WP3=53259:REM * ADDRESSES FOR
WIDTHS OF PLAYERS
25090 HP0=53248:HP1=53249:HP2=53250:HP3=53251:REM * HORIZONTAL POSITION
ADDRESSES FOR PLAYERS
25099 WAIT=31000:REM * A USEFUL SUBROUTINE
25100 REM * DEFINE SHAPES
25110 RESTORE 25120:DIM BALL$(7):FOR C=1 TO 7:READ
A:BALL$(C,C)=CHR$(A):NEXT C
25120 DATA 60,126,255,255,255,126,60
25130 RESTORE 25140:DIM MAN$(12):FOR C=1 TO 12:READ
A:MAN$(C,C)=CHR$(A):NEXT C
25140 DATA 56,56,16,124,124,124,124,108,40,40,40,40
25150 RESTORE 25160:DIM BOX$(6):FOR C=1 TO 6:READ
A:BOX$(C,C)=CHR$(A):NEXT C
25160 DATA 255,129,129,129,129,255
25170 RESTORE 25180:DIM BIRD$(4):FOR C=1 TO 4:READ
A:BIRD$(C,C)=CHR$(A):NEXT C
25180 DATA 66,165,24,24
25300 GOTO 100:REM * LETS SEE THEM !
31000 REM ** WAIT FOR START KEY **
31010 POSITION 10,20:? "Push START to continue."
31020 IF PEEK(53279)<>6 THEN 31020
31030 ? CHR$(125):RETURN
31111 POKE 710,12:POKE 709,0

```

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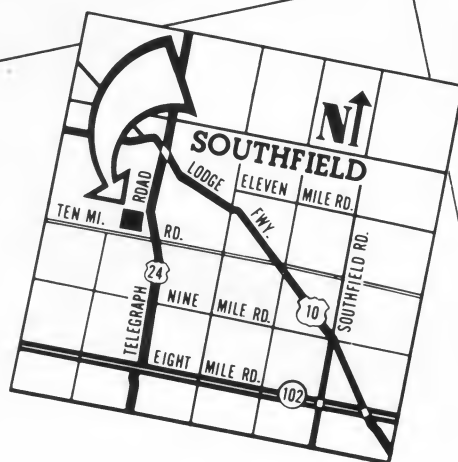
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